

REMARKS

This application pertains to a novel process for preparing specific oxidants which in mixtures with precursors for preparing conductive polymers display a long processing time.

Claims 1-35 and 38-75 are pending, although claims 15-35 and 38-75 have been withdrawn from consideration as drawn to non-elected subject matter. The claims under examination are therefore claims 1-14. Applicants respectfully request that upon the allowance of claims drawn to elected subject matter, the non-elected & withdrawn claims be rejoined.

Claims 1-14 stand rejected under 35 U.S.C. 102(a) as anticipated by Kirchmeyer et al (US 2002/0077450).

Applicants' claims pertain to a process for preparing an oxidant for the preparation of conductive polymers, in which the oxidant is treated with an ion exchanger. Applicants' claims require that the oxidant being used for the preparation of conductive polymers be treated with an ion exchanger **before** the oxidant is mixed with precursors for the preparation of conductive polymers.

The use of oxidants prepared in accordance with the inventive process has specific advantages, as demonstrated by the Examples and discussed further below.

Kirchmeyer et al (US 2002/0077450 A1) describe a process for the preparation of polythiophenes that are readily soluble or dispersible in anhydrous or low-water content solvents wherein phase-transfer catalysts are added during the reaction. In order to purify the finished polythiophene solution a possible work-up step is the removal of salts with the aid of ion-exchange resins (paragraphs [0041] and [0048]). That is, Kirchmeyer et al disclose the use of an ion-exchanger for the purification of a finished polythiophene solution; Kirchmeyer et al do not teach or suggest anything about an oxidant used for the preparation of a polythiophene solution being treated with an ion exchanger before this oxidant is mixed with precursors for the preparation of conductive polymers, i.e., polythiophenes.

Applicants' claims require that the oxidant being used for the preparation of conductive polymers be treated with an ion exchanger **before** being mixed with precursors for the preparation of conductive polymers. Kirchmeyer, by contrast, disclose only the use of ion exchanger for the purification of finished polymer solution and not for the treatment of the oxidant before the oxidant is mixed with the precursors for the preparation of conductive polymers.

Kirchmeyer therefore cannot reasonably be viewed as teaching or suggesting Applicants' novel process, and the rejection of claims 1-14 under 35 U.S.C. 102(a) as anticipated by Kirchmeyer et al (US 2002/0077450) should now be withdrawn.

Claims 1-9, 11, 12 and 14 stand rejected under 35 U.S.C. 102(e) as anticipated by Hsu (US 7,112,368).

Hsu et al. disclose a process for the oxidative preparation of poly(dioxythiophene)/poly(acrylamidoalkylsulfonic acid) complexes. According to Hsu et al. an aqueous solution of poly(acrylamido-alkylsulfonic acid) and an oxidizing agent and an aqueous solution of dioxythiophene monomer are mixed and stirred. A catalyst such as ferricdioxythiophene monomer are mixed and stirred. A catalyst such as ferric sulfate is often added to catalyze the oxidative polymerization (col. 3, lines 38-50). It is advantageous to treat the produced complex with anion and cation exchange resins in order to quench the polymerization and to remove metal ions (col. 3, lines 56-60). Hsu et al. employ ion exchanger for the treatment of finished polymer complexes (col. 8, line 34; col. 11, line 6). Hsu et al. do not disclose the treatment of an oxidant with an ion-exchanger before the oxidant is mixed with precursors for the preparation of conductive polymers.

Once again, it must be emphasized that Applicants' claims require that the oxidant being used for the preparation of conductive polymers be treated with an ion exchanger before being mixed with precursors for the preparation of conductive polymers. Hsu, like Kirchmeyer, by contrast, disclose only the use of ion exchanger for the purification of finished polymer dispersion and not for the treatment of the oxidant before the oxidant is mixed with the precursors for the preparation of conductive polymers.

The Hsu process is therefore completely different than Applicants', and nothing to be found in the Hsu reference could possibly teach or suggest Applicants' novel

process. The rejection of claims 1-9, 11, 12 and 14 under 35 U.S.C. 102(e) as anticipated by Hsu (US 7,112,368) should therefore now be withdrawn.

Further to the differences between Applicants' process and those disclosed by the Kirchmeyer and Hsu references, as shown above, Example 2 of the present application shows the pot life of mixtures containing an oxidant and precursors of conductive polymer. For the present application, "pot life" is defined as the time interval between the time when the mixture is first made up and the time at which the first particles become visible. See paragraph [77] and [159] of the published application. As can be seen from the pot time values, the pot time of a mixture comprising an oxidant prepared according to the claimed process is much higher as compared to the pot time of a mixture comprising an oxidant processed without the use of an ion exchanger.

Example 3 of the present application shows the conductivity and surface resistance of layers prepared from mixtures comprising an oxidant and precursors of conductive polymers. As can be seen from the values shown in Example 3, the conductivity of the layer being prepared from a mixture comprising an oxidant treated with an ion exchanger is much higher and the corresponding surface resistance is much lower compared to the values obtained with a mixture comprising an oxidant not treated with an ion exchanger.

Thus, Applicants' process produces unexpected advantages over the processes of Kirchmeyer et al and Hsu et al.

In view of the present amendments and remarks it is believed that claims 1-14 are now in condition for allowance. Reconsideration of said claims by the Examiner is respectfully requested and the allowance thereof is courteously solicited.

CONDITIONAL PETITION FOR EXTENSION OF TIME

If any extension of time for this response is required, Applicant requests that this be considered a petition therefor. Please charge the required petition fee to Deposit Account No. 14-1263.

ADDITIONAL FEE

Please charge any insufficiency of fee or credit any excess to Deposit Account No. 14-1263.

Respectfully submitted,
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